

Application No. 10/081,699
Amendment dated December 19, 2005
Reply to Office Action of September 20, 2005

AMENDMENTS TO THE CLAIMS:

This listing of claims will replace all prior versions, and listings, of claims in the application.

Listing of Claims:

1. (Currently Amended) An image forming method for forming an image on a reversible thermo-sensitive recording medium provided with a recording layer containing liquid crystal that exhibits a cholesteric liquid crystal phase, said image forming method comprising:

a first heating process for heating the liquid crystal in a crystal phase to a first temperature that allows the liquid crystal to exhibit a cholesteric liquid crystal phase or an isotropic phase to form an image; and

a second heating process for heating at least a part of an area of the recording medium to a second temperature, wherein:

in the second heating process, the liquid crystal is heated to at most a second temperature that is lower than the first temperature and said second temperature causes the at least part of an area where the image has been formed by the first heating process to disolor or develop color without external pressure, and the second temperature causes the at least part of an area to exhibit a cholesteric fixed phase after cooling.

2. (Original) An image forming method as claimed in claim 1, wherein the image formed in the first heating process is a visible image.

3. (Withdrawn) An image forming method as claimed in claim 1, wherein the image formed in the first heating process is a latent image.

4. (Original) An image forming method as claimed in claim 1, wherein, in the first heating process, the liquid crystal that has been heated to the first temperature is rapidly cooled down.

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5. (Original) An image forming method as claimed in claim 4, wherein the liquid crystal that has been rapidly cooled down exhibits a glass phase.

6. (Original) An image forming method as claimed in claim 1, wherein the liquid crystal that has been heated to the first temperature exhibits a glass phase.

7. (Original) An image forming method as claimed in claim 1, wherein, in the second heating process, the liquid crystal that has been heated is rapidly cooled.

8. (Original) An image forming method as claimed in claim 7, wherein the liquid crystal that has been rapidly cooled exhibits a glass phase.

9. (Canceled)

10. (Withdrawn) An image forming method for forming an image on a reversible thermo-sensitive recording medium provided with a recording layer containing liquid crystal that exhibits a cholesteric liquid crystal phase, said image forming method comprising

a first process for selectively setting portions of the liquid crystal in a crystal phase and a fixed phase and thus forming an image on the thermo-sensitive recording medium; and

a second process for discoloring or developing a color of at least a part of the portion(s) set in the fixed phase thus discoloring or developing a color of at least a part of the image.

11. (Withdrawn) An image forming method as claimed in claim 10, wherein, in the first process, the liquid crystal is heated to a temperature that allows the liquid crystal to exhibit a cholesteric liquid crystal phase or an isotropic phase to form an image, and then rapidly cooled.

12. (Withdrawn) An image forming method as claimed in claim 10, wherein, in the second process, the liquid crystal is heated, and then rapidly cooled.

13. (Withdrawn) An image forming method for forming an image on a reversible thermo-sensitive recording medium provided with a recording layer containing liquid crystal that exhibits a cholesteric liquid crystal phase, said image forming method comprising:

heating an area of the medium to at least a first temperature for transitioning the liquid crystal from a crystal phase to a cholesteric liquid crystal phase; and

changing a color of a portion of said area by heating said portion to a second temperature lower than said first temperature;

said second temperature allows the area where a crystal phase has been transited by the heating of the first temperature to change a color without external pressure.

14. (Withdrawn) An image forming method as claimed in claim 13, wherein, in said step of heating, the medium is heated beyond said first temperature to a temperature that allows for transitioning of the liquid crystal to an isotropic phase.

15. (Withdrawn) An image forming method as claimed in claim 13, further including, after said step of heating and before said step of changing, a step of cooling the medium to a third temperature to allow for transitioning of the liquid crystal to a glass phase.

16. (Withdrawn) An image forming method as claimed in claim 13, wherein said step of heating results in liquid crystal in said area having a first image color different than a background color of the medium, and said step of changing results in liquid crystal in said portion having a second image color different from said first image color and different from said background color.

17. (Withdrawn) An image forming method as claimed in claim 13, wherein said step of heating results in liquid crystal in said area being substantially transparent, and

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said step of changing results in liquid crystal in said portion having an image color different from a background color of the medium.

18. (Withdrawn) An image forming method for forming an image on a reversible thermo-sensitive recording medium provided with a recording layer containing liquid crystal that exhibits a cholesteric liquid crystal phase, said image forming method comprising:

a first heating process for heating the liquid crystal in a crystal phase to a first temperature that allows the liquid crystal to exhibit a cholesteric liquid crystal phase or an isotropic phase to form an image; and

a second heating process for heating whole of an area of the recording medium containing at least a part of an area where the image has been formed to allow at least a part of the image to discolor or develop a color.

19. (Withdrawn) An image forming method as claimed in claim 18, wherein said second heating process heats the whole of an area to a second temperature.

20. (Withdrawn) An image forming method for forming an image on a reversible thermo-sensitive recording medium provided with a recording layer containing liquid crystal that exhibits a cholesteric liquid crystal phase, said image forming method comprising:

a first heating process for heating the liquid crystal in a crystal phase to a first temperature that allows the liquid crystal to exhibit a cholesteric liquid crystal phase or an isotropic phase to form an image; and

a second heating process for heating whole of an area of the recording medium containing at least a part of an area to a second temperature, wherein:

said second temperature allows the area where the image has been formed by the first heating process to discolor or develop a color without external pressure.

21. (Withdrawn) An image forming method for forming an image on a reversible thermo-sensitive recording medium provided with a recording layer containing

liquid crystal that exhibits a cholesteric liquid crystal phase, said image forming method comprising:

heating an area of the medium to at least a first temperature for transitioning the liquid crystal from a crystal phase to a cholesteric liquid crystal phase; and

changing a color of all or a portion of said area by heating said portion to a second temperature lower than said first temperature.

22. (Currently Amended) An image forming method for forming an image on a reversible thermo-sensitive recording medium provided with a recording layer containing liquid crystal that exhibits a cholesteric liquid crystal phase, said image forming method comprising:

a first heating process for heating the liquid crystal in a crystal phase to a first temperature that allows the liquid crystal to exhibit a cholesteric liquid crystal phase or an isotropic phase to form an image; and

a second heating process for ~~abruptly rapidly~~ heating at least a part of an area of the recording medium to a second temperature causing the liquid crystal to transit to a cholesteric liquid phase before the liquid crystal transitions to a crystal phase, wherein

in the second heating process, the liquid crystal is heated to at most a second temperature that is lower than the first temperature and said second temperature allows the area where the image has been formed by the first heating process to discolor or develop color without external pressure.

23. (Currently Amended) An image forming method for forming an image on a reversible thermo-sensitive recording medium provided with a recording layer containing liquid crystal that exhibits a cholesteric liquid crystal phase, said image forming method comprising:

a first heating process for heating the liquid crystal in a crystal phase to a first temperature that allows the liquid crystal to exhibit a cholesteric liquid crystal phase or an isotropic phase to form an image;

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a second heating process for heating at least a part of an area of the recording medium to a second temperature, wherein

in the second heating process, the liquid crystal is heated to at most a second temperature that is lower than the first temperature and said second temperature causes the at least part of an area where the image has been formed by the first heating process to discolor or develop color without external pressure; and

a cooling process for cooling the at least part of the area to fix the image after the second heating process thereby causing the at least part of an area subject to the second heating process to exhibit a cholesteric fixed phase having a selective reflection property.